Roving Creel Survey – Poplar Creek – Report

Summary:

Data collected from the Roving Creel Survey (RCS) suggests that recreational fishing takes place on Poplar Creek (PC) upstream of the Perimeter Road Bridge. It was previously assumed that few, if any, people angle in the stretch of PC between this bridge and the confluence of East Fork Poplar Creek (EFPC). The RCS study has observed a private fishing vessel, collected verbal statements from fishmen active in this area, and observed other evidence of angler activity on Poplar Creek.

Introduction:

The Roving Creel Survey (RCS) is a new project on the Oak Ridge Reservation (ORR) conducted by TDEC-DoR-OR. The project is in its first year of data collection. A comprehensive analysis and report of the RCS survey has not yet been completed. This project aims to measure angling effort at three key locations where impaired ORR watersheds drain into publicly accessible waters. This preliminary report will only consider data collected from Poplar Creek (Figure 1), although other fishing activity was documented around the ORR. Fishermen interviews were conducted five times per quarter, from July 2020 to present. TDEC-DoR-OR Personnel were not able to conduct interviews in the Poplar Creek area from February 2021 - March 2021 due to low water levels and unsuitable equipment for passage through shallow waters.

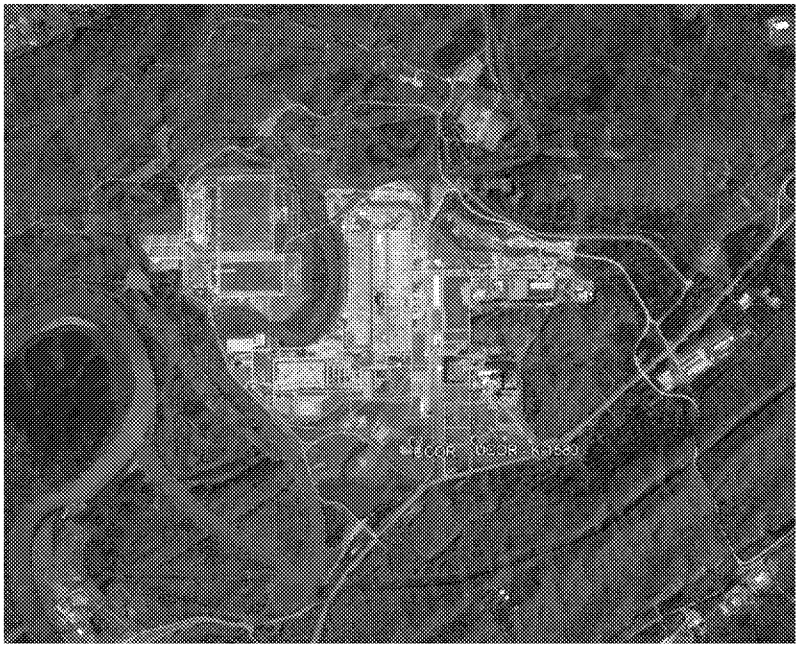

Figure 1: Bear Creek and Poplar Creek Confluence Region (highlighted in purple)

Poplar Creek receives contamination from both current and ongoing activity from DOE Federal Facilities. There is some concern that the consumption of fish from these waters may be harmful to human health. Consumable fish tissue will be analyzed in the coming year in order to gauge the level of risk associated with fish consumption. Little is known about the level of human activity and exposure in this sensitive area.

Because less than 10 surveys were performed per quarter, data presented in this report are not considered qualitative. However, this data provides valuable information that suggest angler activity is greater than previously assumed. The individuals that were interviewed offered important information that indicates human exposure to contamination via the consumption of fish is not zero.

Methods:

TDEC-DoR-OR personnel conducted surveys in Poplar Creek up to the confluence with Bear Creel using active, on-site methods whereby anglers were interviewed either before, during, or immediately following, fishing trips. All waterbodies were sampled using roving creel survey methods outlined in the TWRA 2007 Fisheries Report.

A roving creel survey sample consists of two parts: angler counts and angler interviews. Counts of anglers were taken within the sample period by making a circuit of the stream concurrently with interviews during a single circuit of the waterbody section within a ½-day sampling period (count-as-you-go method). All anglers fishing from either boats or from the shore were counted.

Upon approaching anglers, TDEC-DoR-OR personnel recorded information, which does not require interrupting fishing, including date, location, sample area, fishing from the bank or a boat, and the number of anglers in the fishing party. When the TDEC-DOR-OR personnel reached the angler or angling group, they asked if they would mind spending a few moments answering questions related to their fishing trip. If anglers do not wish to be interrupted, then the TDEC-DoR-OR personnel moved on.

Anglers who agreed to be interviewed were asked the following questions:

- What time did you start fishing today?
- How much longer do you expect to fish?
- What is your primary target species?

- What state and county are you from?
- How frequently do you fish in this area?
- Do you have anything you would like me to know about fishing in this area?

Fishing Effort:

Estimates of fishing effort were calculated using daily angler counts and the number of hours reported within a sample period. Thus, for any given sampling period, fishing effort measured in angler hours (e) was calculated as the product of the total angler count (c) and the number of hours reported during that sampling period (h), or e=c(h). This value estimates total angler-hours for a single lake section within a single time period. This estimate can be expanded to estimate angler hours for the whole day by dividing (e) by the probability for the for the secondary sampling unit (time period/stream section) worked that day.

This roving creel survey divided the day into two equal parts, morning and evening. All Surveys were performed during the morning session over the same Poplar Creek stream section. Thus, the time period probability was 0.5 and the stream section was 1.0, therefore the secondary sampling unit probability was 0.5. If (e)=100, then 100/0.5 = 200 angler hours for the whole area for that entire day (E).

To derive estimates of total quarterly fishing effort, whole day angler hours were multiplied by the number of days within that quarter. TDEC's fiscal year runs July 1st – June 30th.

- Quarter 1 = 92 days (July – September)
- Quarter 2 = 92 days (October – November)
- Quarter 3 = 90 days (January – March)
- Quarter 4 = 91 days (April – June)

All work on this project follows the requirements of TDEC Division of Remediation Oak Ridge *Office Health and Safety Plan* (TDEC 2020).

Preliminary Results for Poplar Creek region:

Between July 2020 and June 2021, five angler interviews were conducted within the Poplar Creek region of the survey area (Figure 2). Nine individual fishermen reported angling 35.5 total hours on sampling event days. Individual fishermen in this region reported fishing between 3.0 and 5.5 hours total on the day that they were interviewed. The average time reported spent on the water in this area was 4.1 hours per fisherman (Table 1). TDEC-DoR-

OR personnel estimate that fishermen angle for approximately 1658.1 hours in Poplar Creek up to the confluence with Bear Creek per year (Table 2).

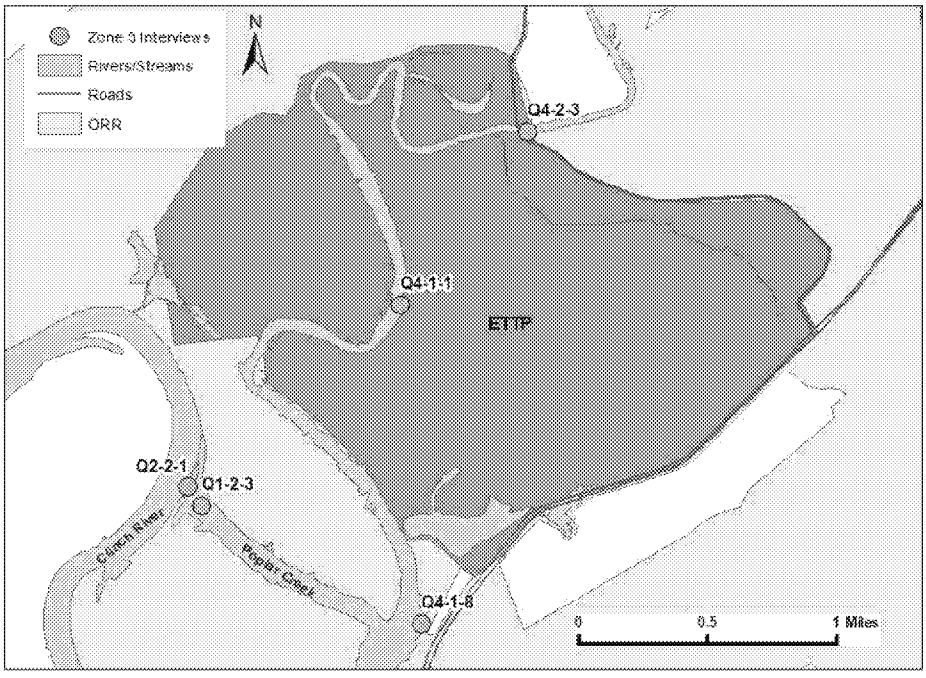

Figure 2: Vessel locations at the time of Creel Survey

Table 1. Summary of angler interviews within the Poplar Creek region of the creel survey.

Zone 3 Interviews									
Quarter-Event	Interview	ID	Date	Lat (DM)	Long (DM)	Zone	Party Size	Reported Hours	Total Hours
Q1-2	3	Q1-2-3	7/19/20	35.925078	-84.40889	3	2	3.0	6
Q2-2	1	Q2-2-1	11/1/20	35.925925	-84.40966	3	2	3.0	6
Q4-1	1	Q4-1-1	4/13/21	35.934167	-84.397778	3	2	5.0	10
Q4-1	8	Q4-1-8	4/13/21	35.919757	-84.396571	3	1	5.5	5.5
Q4-2	3	Q4-2-3	4/26/21	35.942008	-84.390605	3	2	4.0	8

Table 2. Estimated angler hours within the Poplar Creek region of the creel survey.

FY21 Quarter	Estimated Hours/Day	Estimated Hours/Quarter
July – Sep 2020	2.4	220.8
Oct – Dec 2020	4.0	368.0
Jan – Mar 2021	0.0*	0.0*
April – June 2021	11.8	1069.3
Yearly	18.2	1658.1

*Low water conditions prevented boat access during this period.

Select Interviews:

Five fishing vessels have been observed in the Bear Creek/Poplar Creek Confluence region. Three of the vessels were willing to participate in an interview. One vessel declined, but observable data was recorded such as location and party size (Figure 2).

Interview #1
Date: 7/19/2020
Location: 35.925556, -84.408889
Party Size: 2
Self-Reported Angling Hours: 3.0 Hours
Target Species: Any
Residence: Knoxville, TN
Notes: This vessel said they were having a really successful day on the water. They told TDEC staff that they had caught five Rock Bass in the first hour of fishing.

Interview #2
Date: 11/1/2021
Location: 35.925556, -84.409722
Party Size: 2
Self-Reported Angling Hours: 3.0 Hours
Target Species: Striped Bass
Residence: Knoxville, TN
Notes: Driver noted that "angling this Fall has been significantly worse that previous years." He suspects that the "increased sedimentation" is contributing to less angler success. Driver indicated that they fish in this area frequently.

Interview #3
Date: 4/13/2021
Location: 35.3934167, -84.397778
Party Size: 2
Self-Reported Angling Hours: 5.0 Hours
Target Species: Crappie
Residence: Oak Ridge, TN
Notes: Driver said that I have interviewed him before during a different RCS event. He says that he is out on the water very frequently, at least once a week. Driver said that this area (Poplar Creek) is a "prime fishing spot" during the popular spring and fall fishing seasons.

Discussion:

Preliminary analysis of the data indicates that waterways downstream of Bear Creek Valley are easily accessible to the public. According to the small sample size of interviews, the Bear Creek/Poplar Creek Confluence Region seems to be utilized by locals from the Oak Ridge, Kingston, and Knoxville areas. These locals regard Poplar Creek as a "prime fishing spot" during the spring and fall fishing seasons, when the Clinch River is crowded (RCS Q4-1: Interview #1 – 4/13/21). Fishermen have access to these location by an established trail (Figure 3), makeshift boat launch (Figure 4), public bridges (Figure 5), and public greenways.

Figure 3: Fisherman's path from Blair Road to the northern bank at the confluence of EFPC and PC

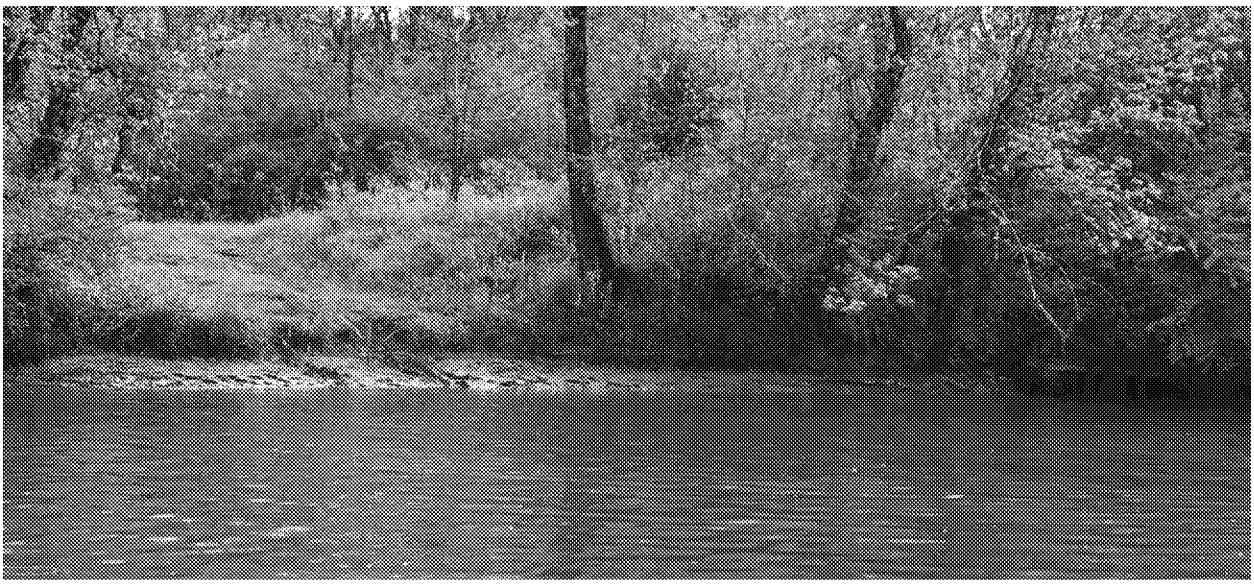

Figure 4: Boat access approximately 100 meters upstream of the Blair Road Bridge. Recent tire marks can be observed in this photo.

Figure 5: Fishing line left at the Blair Road Bridge

Most fishermen do not angle from a motorized boat in the area upstream of the Perimeter Road Bridge. There are large concrete pilings partially submerged under the bridge that most consider imposing obstacles (Figure 6). However, the bridge can be passed by going between the pilings where the water depth is approximately eight feet deep in most places. Some fishermen specifically seek out this location due to its seclusion.

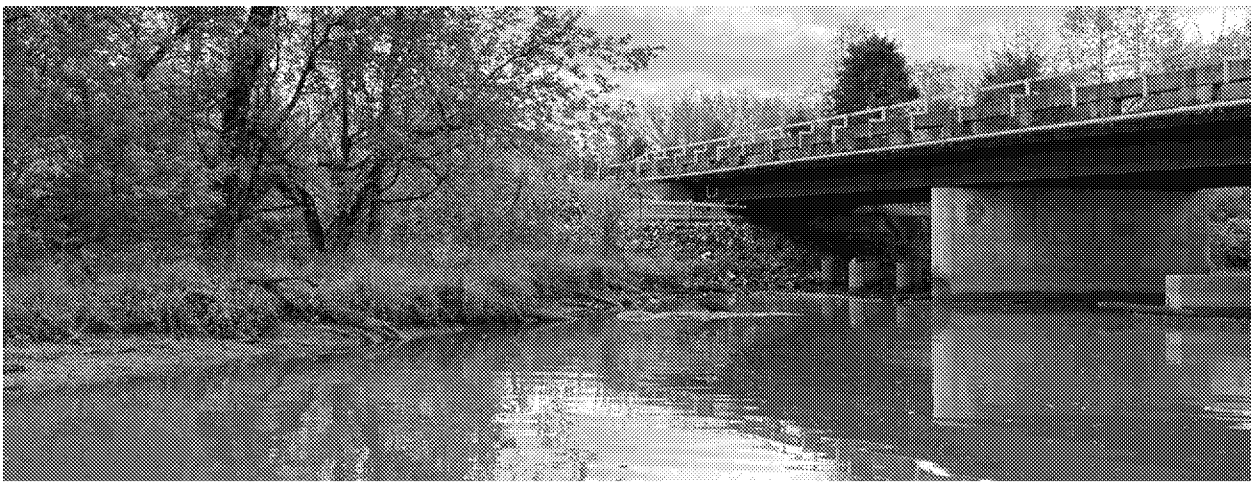

Figure 6:Perimeter Road Bridge and Submerged Piers

One group of fishermen told TDEC personnel that they were heading there to construct natural habitats out of fallen branches along the bank of the creek to increase their angling success later in the year. They told TDEC personnel that the best fishing locations are the small creeks and canals that feed into the Clinch River. They specifically mentioned that Poplar Creek, just downstream of the first bridge (Perimeter Road Bridge) was one of the best fishing locations (Q3-1: Interview #2 – 1/30/21).

Figure 7: Fileted Fishes Located at the Boat Ramp Dock on 2/23/21 (Captured on "Dana's iPhone, 8:59:25")

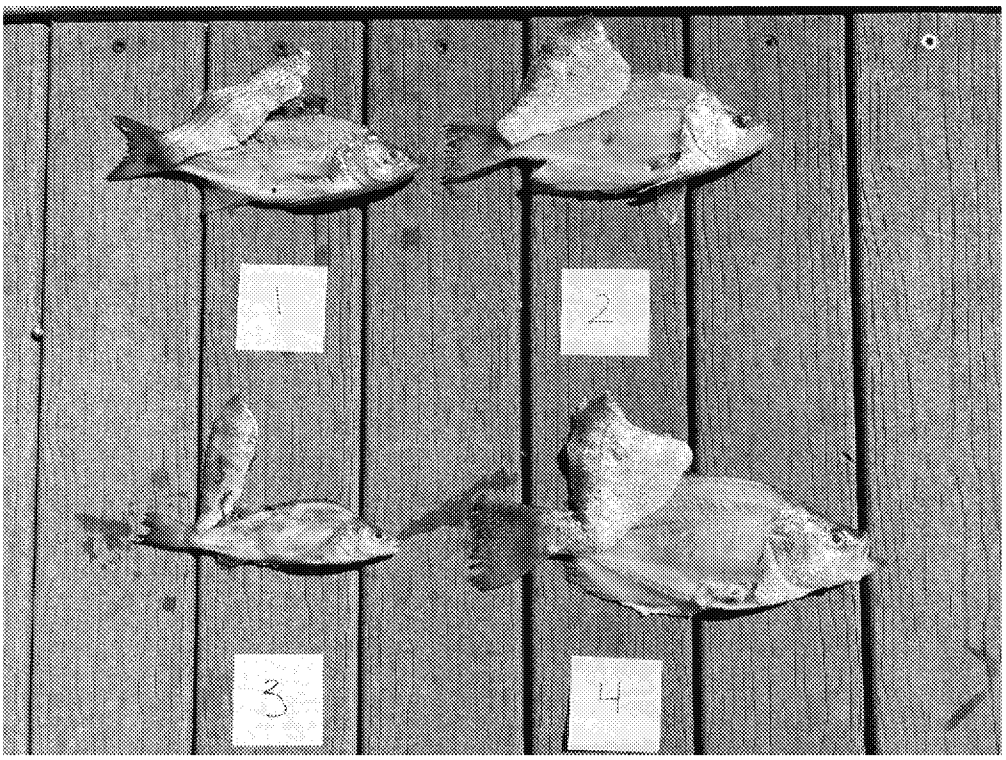

Figure 8: Fileted Fishes Located at the Boat Ramp Dock on 2/23/21. 1) White/Striped Bass 2) White Crappie 3) Yellow Perch 4) White Crappie. (Captured on "Dana's iPhone, 12:15:59")

There is some concern that fishermen are not regarding the signage advising against the consumption of fish captured from these waters. On 02/23/21, TDEC personnel observed evidence of fish fileted at the loading ramp during a routine RCS event (Figure 7 and Figure 8). Due to the species present, size, and fileting technique of these specimens, it can reasonably be assumed that these fish were likely consumed.